AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Original) A laser patterning device, comprising a turntable on which a process member is placed and which rotates the member, a linear slider, a laser serving as light source, an optical system mounted on said slider to condense the laser light and form a laser spot on said member, and an optical modulator to vary optical intensity of said laser spot; which rotates said processed member by means of said turntable, and moves the optical system mounted on said slider while performing laser patterning of a prescribed pattern on said processed member.

2. (Original) The laser patterning device according to claim 1, comprising a formatter, comprising an oscillator which generates a reference signal in order to synchronize the rotation rate of said turntable and the control signals of said optical modulator; a storage device to record digital data corresponding to the output values of the control signals of said optical modulator; and a converter for conversion of said digital signals into analog signals.

3. (Currently amended) A laser patterning device, comprising a turntable on which a process member is placed and which rotates the member, a linear slider, a laser serving as light source, an optical system mounted on said slider to condense the laser light and form a laser spot on said member, and an optical modulator to vary

optical intensity of said laser spot; which rotates said processed member by means of said turntable, and moves the optical system mounted on said slider while performing laser patterning of a prescribed pattern on said processed member~~The laser patterning device according to claim 1~~, wherein the distance of which said optical system moves on the slider while said turntable rotates once is set to be equal to the radius of the Airy disk of said laser spot.

4. (Original) A laser patterning method, wherein a processed member is rotated, and laser light is moved linearly to perform laser patterning of a prescribed pattern on said processed member.

5. (Original) The laser patterning method according to claim 4, wherein said processed member is placed on a turntable and rotated; and optical system mounted on a linear slider is moved linearly and causes laser light to move along the linear direction of the slider; and laser patterning is performed in a prescribed pattern on said processed member, while an optical modulator changes the laser light intensity.

6. (Original) The laser patterning method according to claim 5, wherein the driver of said turntable is driven based on a reference signal generated by an oscillator; digital data recorded in a storage device is converted into analog signals and supplied to said optical modulator based on the reference signal; and the rotation rate of said turntable is synchronized with the control signals of said optical modulator.

7. (Currently amended) A laser patterning device, comprising a turntable on which a process member is placed and which rotates the member, a linear slider, a laser serving as light source, an optical system mounted on said slider to condense the laser light and form a laser spot on said member, and an optical modulator to vary optical intensity of said laser spot; which rotates said processed member by means of said turntable, and moves the optical system mounted on said slider while performing laser patterning of a prescribed pattern on said processed member~~The laser patterning device according to claim 6~~, wherein the distance over which said optical system moves linearly along said slider while said turntable rotates once is made equal to the radius of the Airy disk of said laser spot.

8. (Original) A laser patterning device, comprising a turntable on which a processed member is placed and which rotates the member; a linear slider; a laser serving as a light source; an optical system, mounted on said slider, to condense the laser light to form a laser spot on said processed member; sampling coordinate generation means which generates sampling coordinates while sequentially modifying the radius from the center of rotation of said turntable and the rotation angle; sampling information generation means which generates sampling information corresponding to specific physical quantities representing the state at the position of said sampling coordinates; and exposure control means to control the exposure does of said laser spot based on said sampling information.

9. (Original) A laser patterning device, comprising a turntable on which a processed member is placed and which rotates the member; a linear slider; a laser serving as a light source; and optical system, mounted on said slider, to condense the laser light to form a laser spot on said processed member; sampling information generation means which generates sampling information corresponding to specific physical quantities representing the state at sampling coordinate positions, while sequentially changing the radius from the center of rotation of said turntable and the rotation angle; exposure dose conversion means to perform conversion into exposure dose information corresponding to the exposure does necessary to change from said sampling information to the state of said physical quantities, based on the photosensitive characteristic curve of said processed member; and exposure dose control means to control the exposure dose of said laser spot on said exposure does information.

10. (Original) The laser patterning device according to claim 8, wherein said sampling information generation means generates sampling information by calculations from said sampling coordinates at the time of drawing operation.

11. (Original) The laser patterning device according to claim 8, wherein the sampling information generation means comprises storage means to store, in a relative coordinate system, sampling information comprised by a prescribed basic pattern when the drawing pattern comprises repetitions of said basic pattern, and relative coordinate conversion means to convert said sampling coordinates into relative coordinates; and,

which reads and outputs the sampling information, based on relative coordinates, from said storage device.

12. (Original) The laser patterning device according to claim 11, wherein the amount of advance of the slider during a single rotation of said turntable is made equal to an integral fraction of unity of said basic pattern to draw the basic pattern.

13. (Original) The laser patterning device according to claim 8, wherein the same laser pulse train is irradiated a plurality of times during a single rotation of said processed member, and the same drawing pattern is formed a plurality of times on the processed member.

14. (Original) A laser patterning method, wherein the processed member is placed on a turntable and rotated and an optical system mounted on a linear slider is moved to cause laser light to move along the slider; sampling coordinates are generated while sequentially changing the radius from the center of rotation of the turntable and the rotation angle; sampling information corresponding to specific physical quantities is generated representing the state and sampling coordinate positions; and, laser patterning of a prescribed pattern is performed on said processed member while changing the exposure does of the laser spot based on the sampling information.

15. (Original) A laser patterning method, wherein the processed member is placed on a turntable and rotated and an optical system mounted on a linear slider is

moved to cause laser light to move along the slider; sampling information is generated corresponding to specific physical quantities representing states at sampling coordinate positions while sequentially changing the radius from the center of rotation of the turntable and the rotation angle; conversion into exposure dose information is performed corresponding to the exposure dose necessary to change from said sampling information to the state of said physical quantities, based on the photosensitive characteristic curve of said processed member; and, laser patterning of the prescribed pattern is performed on said processed member, controlling the exposure dose of said laser spot based on said exposure dose information.

16. (Original) The laser patterning method according to claim 14, wherein sampling information is generated by calculation from said sampling coordinates at the time of drawing operation.

17. (Original) The laser patterning method according to claim 14, wherein, when the drawing pattern comprises a repetition of a prescribed basic pattern, sampling information comprised by the basic pattern is stored in a storage device in advance in relative coordinates, said sampling coordinates are converted into relative coordinates, and sampling information is read and output from said storage device based on the relative coordinates.

18. (Original) The laser patterning method according to claim 17, wherein the amount of advance of the slider during a single rotation of said turntable is made equal to an integral fraction of unity of said basic pattern to drawing the basic pattern.

19. (Original) The laser patterning method according to claim 14, wherein the same laser pulse train is irradiated a plurality of times during a single rotation of said processed member, and the same drawing pattern is formed a plurality of times on the processed member.

20. (Currently amended) A hologram master for reproducing a color three-dimensional image of an object, wherein a plurality of hologram regions with interference fringes, formed by interference between an object wave and a reference wave, recorded therein by a color component ~~to reproduce images obtained by analysis of a color three-dimensional image into color components~~ are placed on the same hologram surface~~substrate~~.

21. (Original) The hologram master, according to claim 20, wherein said color components are red, green, and blue.

22. (Original) The hologram master according to claim 20, wherein said substrate is a disk.

23. (Original) The hologram master according to claim 20, wherein said plurality of hologram regions are placed on a circular area.

24. (Original) The hologram master according to claim 20, wherein the material of said substrate is either glass, quartz, or metal.

25. (Original) The hologram master according to claim 20, wherein photosensitive material whose shape, transmissivity, reflectivity, refractive index, or other optical characteristic changes spatially is formed on the surface of the substrate.

26. (Currently amended) A hologram master manufacturing method, wherein a photosensitive material is applied to a substrate, and the photosensitive material is exposed and developed to form, on said photosensitive material, a plurality of hologram regions with interference fringes, formed by interference between an object wave and a reference wave, recorded therein by a color component~~which reproduce images resulting from analysis of a color three-dimensional image into color components~~.

27. (Original) The hologram master manufacturing method according to claim 26, wherein said photosensitive material is used as a sacrificial layer, and the pattern formed in the photosensitive material by etching is transferred to, said substrate.

28. (Original) The hologram master manufacturing method according to claim 26, wherein laser light is moved linearly while rotating a substrate on which is applied

said photosensitive material, and said hologram regions are formed by drawing a pattern having numerous gray scale levels in the depth direction while changing the optical intensity of the laser spot formed on said photosensitive material.

29. (Original) The hologram master manufacturing method according to claim 26, wherein, as the exposure equipment performing said exposure processing, a laser patterning device is used comprising a turntable to rotate a substrate coated with photosensitive material, a slider which is capable of moving linearly, a laser serving as a light source, an optical system mounted on said slider and which condenses the laser light to form a spot on the layer of said photosensitive material, and an optical modulator which changes the optical intensity of said laser spot, to draw an arbitrary pattern.

30. (Original) A hologram, fabricated by transferring onto hologram recording media an image reproduced on the basis of the hologram master according to claim 20.

31. (Original) A hologram manufacturing method, which performs fabrication by transferring onto hologram recording media the image reproduced on the basis of the hologram master according to claim 20.

32. (Original) A display device, comprising the hologram master according to claim 20; means for rotating the hologram master; light sources in color corresponding to said hologram regions; and means for irradiating hologram regions with beams

emitted from light sources in corresponding colors, to reproduce color three-dimension images.